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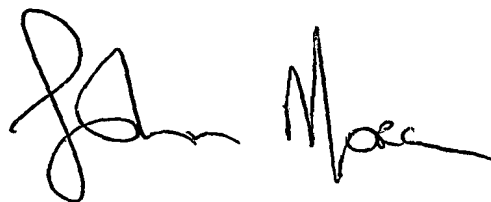
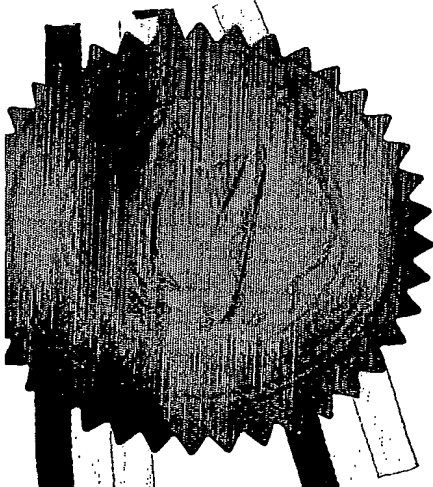
I HEREBY CERTIFY that annexed hereto is a true copy of  
documents filed in connection with the following patent  
application:

Application No. S2002/0581

Date of Filing 15 July 2002

Applicant Connolly James, an Irish citizen of 46  
Templemichael Glebe, County Longford, Ireland.

Dated this 13<sup>th</sup> day of August 2003.



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S200210581

FORM NO. 1

Request for the Grant of a Patent

PATENTS ACT, 1992

The Applicant(s) named herein hereby request(s)

- ☐ the grant of a patent under Part II of the Act  
☒ the grant of a short-term patent under Part III of the Act

on the basis of the information furnished hereunder.

1. Applicant(s)

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Description/Nationality  
Irish

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OIFIG NA bPAITINNÍ  
FAIGHTE  
15 JUL 2002  
Fee Paid 60 Initials *en*

2. Title of Invention

Microwave Heated Slipper

3. Declaration of Priority on basis of previously filed application(s) for same invention (Sections 25 & 26)

Previous filing date

Country in or for which filed

Filing No.

4. Identification of Inventor(s)

Name(s) of person(s) believed  
by Applicant(s) to be the inventor(s)

James Connolly

Address

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Longford  
Ireland

5. Statement of right to be granted a patent (Section 17 (2) (b))

As Inventor

6. Items accompanying this Request – tick as appropriate

- (i) ☒ prescribed filing fee (€60)
- (ii) ☒ specification containing a description and claims  
☐ specification containing a description only  
☒ Drawings referred to in description or claims
- (iii) ☒ An abstract
- (iv) ☐ Copy of previous application(s) whose priority is claimed
- (v) ☐ Translation of previous application whose priority is claimed
- (vi) ☐ Authorisation of Agent (this may be given at 8 below if this Request is signed by the Applicant(s))

7. Divisional Application(s)

The following information is applicable to the present application which is made under Section 24-

Earlier Application No: .....

Filing Date: .....

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15 JUL 2002

Fee Paid ..... Initials .....

8. Agent

The following is authorised to act as agent in all proceedings connected with the obtaining of a patent to which this request relates and in relation to any patent granted-

NameAddress9. Address for Service (if different from that at 8)Signed

Name(s):

Capacity (if applicant is a body corporate):

Date

12/07/02

James Connolly  
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Managing Director

## Microwave Heated Slipper

The present invention relates to microwave heated slipper.

In the context of this invention, a 'microwave heated slipper' is an indoor slipper to be worn on the foot. In particular, it relates to a thermal insole of the type, which is provided with microwave energy, and subsequently releases that energy as heat as it cools to ambient temperature.

There are a number of known slippers of the type having material inserts or packs in the lining or sole, which are suitable for heating. They generally fall into one of three types: -

- Natural material - this consists of a natural material such as corn, wheat, nuts, housed in an encapsulant which can be heated in the microwave. The problem with this type is that its heat retention characteristics are poor, as it stays warm for only about fifteen minutes. The nature of the material is such as to give off an odour, which for most people is unacceptable. The major drawback of this type of product is that 'bunching' can occur. 'Bunching' describes the natural tendency of the material when agitated to migrate into low-pressure areas of the slipper; these are usually not the areas which need the heat.
- Desiccant - a desiccant such is used instead of natural material. This overcomes the odour problem, but does not overcome the heat retention or 'bunching' problem.
- Gels - this is the most popular and consists of a bag containing a mixture of water and thickening agent added (normally a super absorbent polymer). The heat source has a propensity to be very uneven and the thickening agent causes the gel to have a very poor thermal conductivity (due to the fact that the liquid cannot generate convective currents), this product becomes very unsafe and indeed could explode. This leads to a very complicated and unfriendly mode of use. For example, it is necessary to heat the product for thirty seconds; invert; and heat for a further thirty seconds. If not sufficiently hot, inversion is again required followed by a ten second period of heating after which, the product is again inverted and heated for a further ten seconds and so on. It can take up to four minutes to heat the pack to 80°C - a total of twenty inversions.

It is an object of the present invention to overcome these problems.

The invention, therefore, provides a rubber insole for use in the manufacture of a microwave-heated slipper.

Preferably the first material in the insole is a solid powder with a relatively high specific heat capacity and the ability to heat up in a microwave environment. Preferably the first material is ferrite.

Preferably the second material in the insole comprises an inert rubber. Preferably this material is capable of conducting the heat created by the first material when exposed to microwave energy. Preferably, this material has a high temperature tolerance (in excess of 200°C). Preferably, the second material is a silicone rubber.

Preferably the first material and the second material are blended in a ratio of 2:1 and can be subsequently moulded into a flat, flexible insole shape.

The invention also relates to an insole which does not need an encapsulant, because of the fact that it is a solid, thereby negating the problem of bursting as illustrated with encapsulated gels.

The invention will be understood in greater detail from the following description of a preferred embodiment thereof given by way of example only.

A mixture is provided which comprises a first material and a second material. The first material comprises a ferrite and the second material comprises a silicone rubber. The first material is in powder form, which can be mixed with the uncured silicone in a Z-blade mixer or two-roll mill to form a 'dough'-like material.

The first and second materials are mixed in a ratio of 2:1

The mixture described above may be manufactured in bulk and then used in the preparation of an insole for use in a custom made slipper which will be able to accommodate the insole in accordance with the invention.

Thus, the insole may be subjected to microwave activity in a microwave oven until it reaches a temperature of about 100°C subsequent to which it is used in conjunction with a custom designed slipper as a microwave heated slipper.

The slipper itself comprises an upper material, foam cushion, outsole and a closure extending half way along either side of the slipper. (See diagram 1)

Preferably the upper material will have heat insulating properties, be attractive and comfortable to the user and be of a sufficient quality to hold the slipper onto the foot. Preferably, this upper material is thick cotton plush.

The foam cushion must be able to withstand temperatures in excess of 100°C as it will come into direct contact with the heatable insole. Preferably, said cushion will insulate the heated insole and deflect the heat upward toward the foot of the user. Preferably the cushion should be made of EPDM foam.

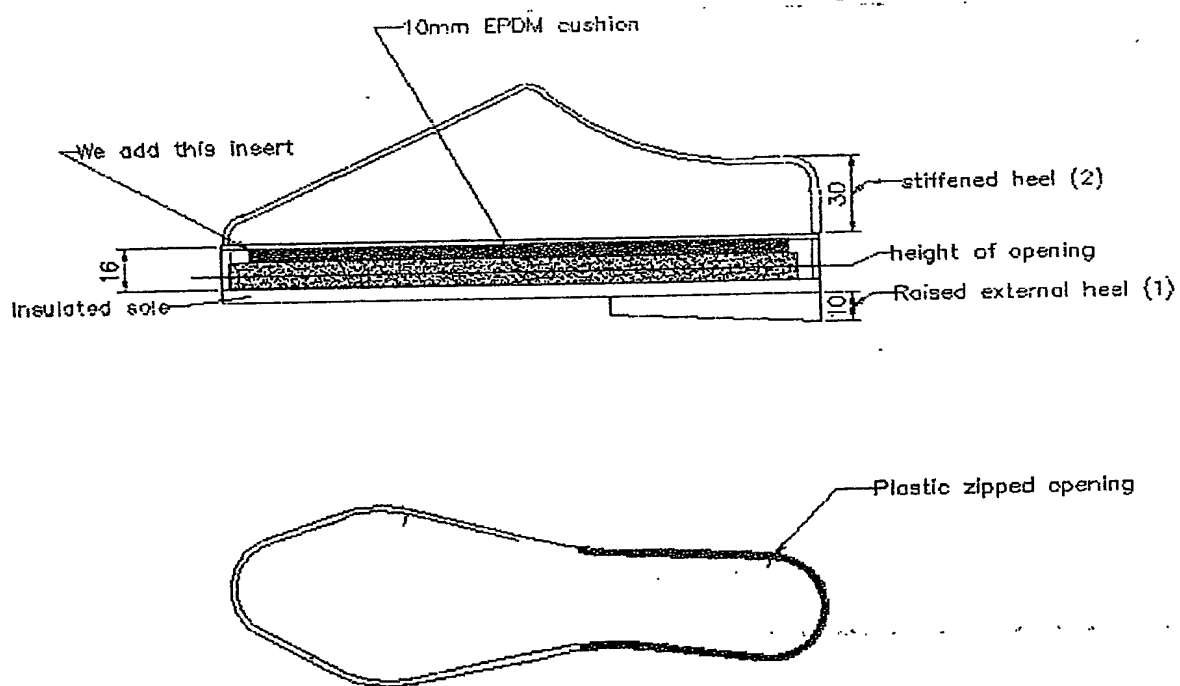
Preferably, the outsole is made of a hardwearing, flexible material. It should have a good temperature tolerance and be easy to mould into a complex form. It is important that the material has excellent load-bearing properties and a coefficient of friction tailored to being walked upon. Preferably this material should be a TPE (thermoplastic elastomer).

In the removal and insertion of the insole, a 'pocket' is necessary to firmly hold the insole in place underneath the upper material. This pocket should extend across the full area of the slipper. This pocket should have a closure to retain the insole. Preferably the closure should be one continuous device that can be closed and reopened many times without causing

wear on the slipper itself or the closure. Preferable the closure should extend in a continuous line around the slipper; extending halfway down either side of the slipper. Preferably the closure should be a zipper or velcro fastener.

The invention is not limited to the embodiments described herein which may be modified or varied to fit other articles of clothing without departing from the scope of the invention.

Diagram 1 :



### Claims

- 1) That a material comprising a silicone/ferrite compound is used to form the insole
- 2) An insole according to claim 1 in which said insole conforms to the shape of a pocket in custom made footwear.
- 3) That a separate opening in the sole of a slipper is used to contain the removable insert.
- 4) That this opening according to claim 3 is secured using a plastic zip or Velcro closure.
- 5) That an EPDM foam cushion, capable of withstanding temperatures in excess of 100°C is used under the insole - to insulate the insole and deflect the heat upward towards the foot.

### Abstract

A microwave heated slipper is disclosed comprising custom designed slipper with a removable insole. The insole is made from a silicone and ferrite compound, which is reactive to microwave energy, this energy is released in the form of heat. The slipper has a zipped or velcro opening in the rear to accommodate the insole. The properties of all the materials used in the manufacture of the slipper are such that they have insulating properties and serve to keep the foot warmer for longer

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